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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/042,057

01/07/2002

Manfred Baldauf

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EXAMINER

WILLS, MONIQUE M

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

01/15/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/042,057

Applicant(s)

BALDAUF ET AL.

Examiner

Monique M. Wills

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 9-16 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 17-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Request for Continued Examination

The request filed on August 21, 2006 for a Request for Continued Examination (RCE) under 37 CFR 1.114 based on parent Application No. 10/042,057 is acceptable and a RCE has been established. An action on the RCE follows.

The following rejections are overcome:

- Claim 1 rejected under 35 U.S.C. 102(e) as being anticipated by Einhart et al. U.S. Patent 6,531,876.
- Claims 1-4 rejected under 35 U.S.C. 102(e) as being anticipated by Barton U.S. Patent 6,724,194.
- Claim 2 rejected under 35 U.S.C. 103(a) as being unpatentable over Einhart et al. U.S. Patent 6,531,876.
- Claim 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. U.S. Patent 6,724,194 in view of Tillmetz et al. U.S. Patent 6,410,175.
- Claims 4 & 5 rejected under 35 U.S.C. 103(a) as being unpatentable over Einhart et al. U.S. Patent 6,531,876 in view of Tillmetz et al. U.S. Patent 6,410,175.
- Claim 6 rejected under 35 U.S.C. 103(a) as being unpatentable over Einhart et al. U.S. Patent 6,531,876 in view of Wittel U.S. Patent 4,583,583.

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- Claims 7-8 rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. U.S. Patent 6,724,194 in view of Fekete U.S. Patent 4,962,462.

Claims 1-8 and newly added claims 17-20 are rejected as follows.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Einhart et al. U.S. Patent 6,531,876 in view of Chandran et al. U.S. Pat. 6,548,197.

Einhart teaches a fuel cell installation, comprising: a fuel cell stack 6 (Fig. 1 & col. 4, lines 1-6) including individual fuel cell units (col. 4, lines 8-11) electrically connected in series (col. 4, lines 8-11). Each individual fuel cell unit includes a contact unit 1 arranged in series for voltage measurement/control (col. 4, lines 34-38), forming separate subsystems. See Figure 1. The separate subsystems are not identical, in that each fuel cell unit may have a different thickness (col. 6, lines 10-15).

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The reference is silent to connecting the subsystems in parallel(claim 2) or employ fuel cells o different types include PEM or SOFC fuel cells (claims 1 & 17-20).

However, Chandran teaches that it is well known in the art to employ various fuel cell types including PEMs and SOFCs to generate electricity. See column 7, lines 17-28.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the multiple fuel cell types of Chandran in the subsystems of Einhart, in order to generate electricity from a multitude of fuel cell sources.

With respect to connecting the subsystems in parallel, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ a parallel configuration of fuel cell units of Einhart, since it has been held that rearranging parts of an invention involves only routing skill in the art. In re Japikse, 86 USPQ 70. Furthermore, the skilled artisan recognizes that parallel combinations deliver higher current from fuel cell stacks.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

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subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable under Barton U.S. Patent 6,724,194 in view of Chandran et al. U.S. Pat. 6,548,197 .

In re claim 1, Barton teaches a fuel cell installation, comprising a fuel cell stack 1 including individual fuel cell units electrically connected in series (Fig. 1 & col. 5, lines 5-15). Each individual fuel cell unit includes a voltage-monitoring unit for voltage measurement/control, forming separate subsystems. See Figure 1 and column 5, lines 5-15. The separate subsystems are not identical, in that each fuel cell unit may have a different voltage output (col. 6, lines 50-60).

With respect to claim 2, the subsystems may be electrically connected in parallel (col. 1, lines 60-65). As to claim 3, the subsystems include a polymer electrolyte membrane fuel cell (col. 5, lines 5-15). With respect to claim 4, the fuel cell stack includes a low-voltage unit (col. 6, lines 50-60).

The reference is silent employing fuel cells of different types include PEM or SOFC fuel cells (claims 1 & 17-20).

However, Chandran teaches that it is well known in the art to employ various fuel cell types including PEMs and SOFCs to generate electricity. See column 7, lines 17-28.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the multiple fuel cell types of Chandran in the subsystems of Barton, in order to generate electricity from a multitude of fuel cell sources.

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With respect to connecting the subsystems in parallel, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ a parallel configuration of fuel cell units of Barton, since it has been held that rearranging parts of an invention involves only routing skill in the art. In re Japikse, 86 USPQ 70. Furthermore, the skilled artisan recognizes that parallel combinations deliver higher current from fuel cell stacks.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. U.S. Patent 6,724,194 in view of Chandran et al. U.S. Pat. 6,548,197 and further in view of Tillmetz et al. U.S. Patent 6,410,175.

Barton in view of Chandran teaches a fuel cell installation as described in the rejection described hereinabove, including a fuel cell stack comprising individual polymer electrolyte membrane (PEM) fuel cell units.

The reference is silent to a PEM starter unit.

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Tillmetz teaches that it is conventional to employ PEM units as starter cells because starter cells provide enough output power to heat the reforming, heat the second portion of the fuel cells, and/or powering a peripheral subsystem (col. 4, lines 15-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the a PEM starter unit of Tillmetz in the fuel cell of battery Barton in view of Chandran, in order to provide enough output power to heat the reforming, heat the second portion of the fuel cells, and/or powering a peripheral subsystem as taught by Tillmetz (col. 4, lines 15-25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 & 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Einhart et al. U.S. Patent 6,531,876 in view of Chandran et al. U.S. Pat. 6,548,197 and further in view of Tillmetz et al. U.S. Patent 6,410,175.

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Einhart in view of Chandran teaches a fuel cell installation as described in the rejection described hereinabove, including a fuel cell stack comprising individual polymer electrolyte membrane (PEM) fuel cell units.

The reference is silent to a PEM starter unit.

Tillmetz teaches that it is conventional to employ PEM units as starter cells because starter cells may provide enough output power to heat the reforming, heat the second portion of the fuel cells, and/or powering a peripheral subsystem (col. 4, lines 15-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the a PEM starter unit of Tillmetz in the fuel cell of battery Einhart in view of Chandran, in order to provide enough output power to heat the reforming, heat the second portion of the fuel cells, and/or powering a peripheral subsystem as taught by Tillmetz (col. 4, lines 15-25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

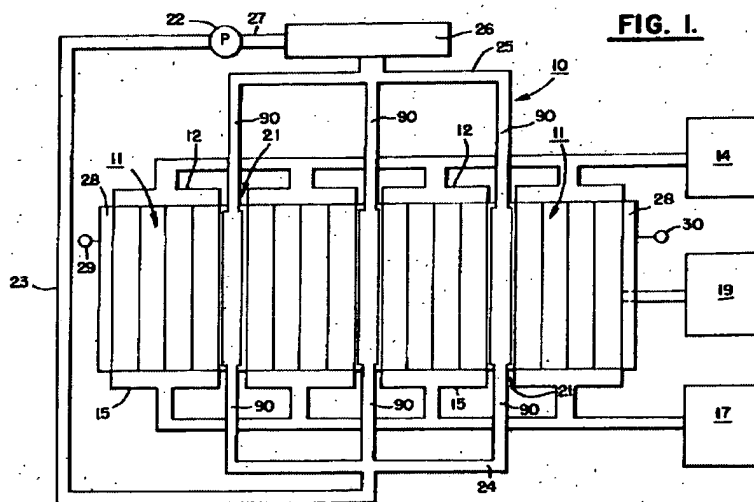
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Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Einhart et al. U.S. Patent 6,531,876 in view of Chandran et al. U.S. Pat. 6,548,197 and further in view of Wittel U.S. Patent 4,583,583.

Einhart in view of Chandran teaches a fuel cell installation as described in the rejection described hereinabove, including a fuel cell stack comprising individual polymer electrolyte membrane (PEM) fuel cell units.

The reference is silent to at least two of the subsystems having respective cooling circuits, configured to be connected by series or parallel.

However, Wittel teaches that it is conventional to employ subsystems having respective cooling circuits in series/parallel as illustrated in Figure



in order to maximize heat transfer from the fuel cell stack to the coolant without undue manufacturing and assembly tolerances and to avoid shunt currents without the need for additional electrical isolation form adjacent cells of the fuel cell stack. See column 3, lines 5-25.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the cooling circuits of Wittel in the fuel cell stack of Einhart in view of Chandran, in order to maximize heat transfer from the fuel cell stack to the coolant without undue manufacturing and assembly tolerances and to avoid shunt currents without the need for additional electrical isolation from adjacent cells of the fuel cell stack.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

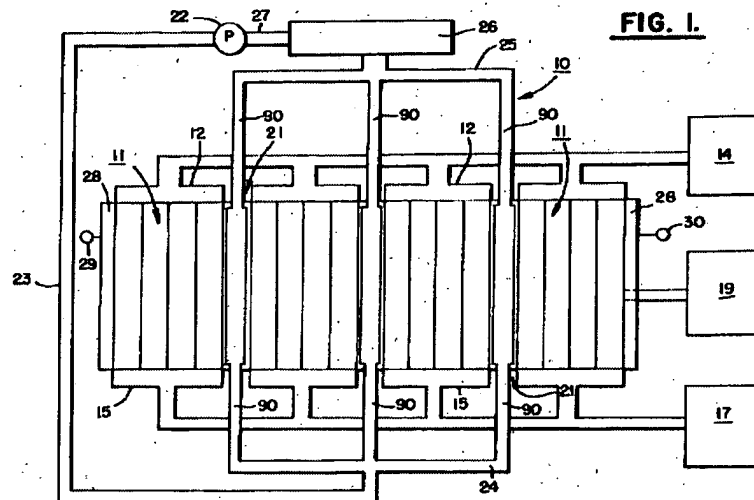
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. U.S. Patent 6,724,194 in view of Chandran et al. U.S. Pat. 6,548,197 and further in view of Wittel U.S. Patent 4,583,583.

Barton teaches a fuel cell installation as described in the rejection described hereinabove, including a fuel cell stack comprising individual polymer electrolyte membrane (PEM) fuel cell units.

The reference is silent to at least two of the subsystems having respective cooling circuits, configured to be connected by series or parallel.

However, Wittel teaches that it is conventional to employ subsystems having respective cooling circuits in series/parallel illustrated as in Figure 1:



in order to maximize heat transfer from the fuel cell stack to the coolant without undue manufacturing and assembly tolerances and to avoid shunt currents without the need for additional electrical isolation form adjacent cells of the fuel cell stack. See column 3, lines 5-25.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the cooling circuits of Wittel in the fuel cell stack of Barton in view of Chandran, in order to maximize heat transfer from the fuel cell stack to the coolant without undue manufacturing and assembly tolerances and to avoid shunt currents without the need for additional electrical isolation form adjacent cells of the fuel cell stack.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barton et al. U.S. Patent 6,724,194 in view of Chandran et al. U.S. Pat. 6,548,197 and further in view of Fekete U.S. Patent 4,962,462.

Barton in view of Chandran teaches a fuel cell installation as described in the rejection described hereinabove, including a fuel cell stack comprising individual polymer electrolyte membrane (PEM) fuel cell units.

The reference is silent to the fuel cell stack being connected to a battery.

Fekete teaches that it is conventional to employ batteries as secondary energy sources so that the power output of the fuel cell stack does not exceed a maximum designed power output (col. 2, lines 50-60), and to provide maximum efficiency by allowing the fuel cell stack to operate close to its average rated power output for all load demand conditions (col. 3, lines 35-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the battery of Fekete in the fuel cell system of Barton, in order to provide maximum efficiency by allowing the fuel cell stack

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to operate close to its average rated power output for all load demand conditions and ensure that the fuel cell stack does not exceed a maximum designed power output.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Einhart et al. U.S. Patent 6,531,876 in view of Chandran et al. U.S. Pat. 6,548,197 and further in view of Fekete U.S. Patent 4,962,462.

Einhart in view of Chandran teaches a fuel cell installation as described in the rejection described hereinabove, including a fuel cell stack comprising individual polymer electrolyte membrane (PEM) fuel cell units.

The reference is silent to the fuel cell stack being connected to a battery.

Fekete teaches that it is conventional to employ batteries as secondary energy sources so that the power output of the fuel cell stack does not exceed a maximum designed power output (col. 2, lines 50-60), and to provide maximum efficiency by

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allowing the fuel cell stack to operate close to its average rated power output for all load demand conditions (col. 3, lines 35-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the battery of Fekete in the fuel cell system of Einhart in view of Chandran, in order to provide maximum efficiency by allowing the fuel cell stack to operate close to its average rated power output for all load demand conditions and ensure that the fuel cell stack does not exceed a maximum designed power output.

Response to Arguments

Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

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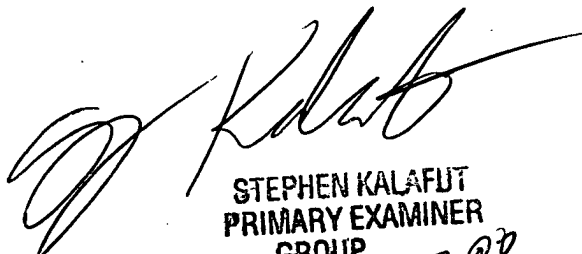
If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MW

1/5/08



STEPHEN KALAFUT
PRIMARY EXAMINER
GROUP 1700